

U.S. Serial No. 10/009,134
Non-Final Office Action mailed May 20, 2009
Amendment submitted August 20, 2009

Listing of the Claims

The following listing of the claims is to replace all previous listings of the claims.

Claims 1-106 (Cancelled)

107. (Currently Amended) A multitarget partially double-stranded RNA molecule comprising two or more different double stranded RNA sequences that are substantially homologous and complementary to two or more sequences of at least one target mammalian gene or mammalian pathogen gene, wherein said two or more different double stranded RNA sequences are separated by cleavage sequences and wherein the double stranded RNA sequences mediate inhibition of target gene expression.

108. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said two or more different double stranded RNA sequences are substantially homologous and complementary to two or more sequences of more than one target gene.

109. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein at least 11 to 30 nucleotides of said multitarget partially double-stranded RNA molecule are involved in each different double-stranded sequence.

110. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein each different double-stranded RNA sequence comprises at least one segment of 30 contiguous nucleotides with a homology of at least 50% to a similar 30 nucleotide region of the target sequence, wherein said segment of 30 contiguous nucleotides is also non-homologous to any naturally occurring and essential polynucleotide sequence.

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111. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said multitarget partially double-stranded RNA molecule is between about 100 and 10,000 polynucleotides in length.

112. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said multitarget partially double-stranded RNA molecule is at least about 200 nucleotides in length.

113. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein one or more of said different double-stranded RNA sequences comprises a sense polynucleotide and an antisense polynucleotide separated by a non-base-paired polynucleotide sequence.

114. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 113, wherein said sense and antisense polynucleotides form a hairpin.

115. (Cancelled)

116. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said cleavage sequences are autocatalytic sequences or splice sites.

117. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said at least one target gene is from a single target pathogen.

118. (Previously Presented) The multitarget partially double stranded RNA molecule of claim 108, wherein said more than one target genes are from more than one target pathogens.

119. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 117, wherein said target pathogen is a virus.

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120. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 119, wherein said virus is selected from the group consisting of HBV, HIV, HSV, CMV, HPV, HTLV and EBV.

121. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 118, wherein said more than one target pathogens are viruses.

122. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 121, wherein said more than one viruses are selected from the group consisting of HBV, HIV, HSV, CMV, HPV, HTLV, and EBV.

123. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said at least one target gene is associated with a disease or disorder in a mammal.

124. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 123, wherein said at least one target gene is a cancer-associated gene.

125. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 108, wherein said more than one target genes are associated with a disease or disorder in a mammal.

126. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 125, wherein said more than one target genes are cancer-associated genes.

127. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said two or more sequences of said at least one target gene are selected from

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the group consisting of transcribed sequences, non-transcribed sequences, coding sequences, non-coding sequences, exon-containing sequences, regulatory sequences and promoter sequences.

128. (Previously Presented) The multitarget partially double-stranded RNA molecule of claim 107, wherein said multitarget partially double-stranded RNA molecule lacks a polyadenylation signal.

129. (Previously Presented) A composition comprising the multitarget partially double-stranded RNA molecule of claim 107.

130. (Previously Presented) The composition of claim 129 further comprising an agent which facilitates polynucleotide uptake by a cell.

131. (Previously Presented) A DNA molecule encoding the multitarget partially double-stranded RNA molecule of claim 107.

132. (Previously Presented) An expression vector encoding the multitarget partially double-stranded RNA molecule of claim 107.

133. (Previously Presented) The expression vector of claim 132, wherein said multitarget partially double-stranded RNA molecule is expressed using a promoter selected from the group consisting of a mitochondrial promoter, a RNA pol I promoter, a RNA pol II promoter, a RNA pol III promoter, a viral promoter, a bacterial promoter and a bacteriophage promoter.

134. (Previously Presented) The expression vector of claim 133, wherein said multitarget partially double-stranded RNA molecule is expressed using a RNA pol III promoter.

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135. (Previously Presented) The expression vector of claim 132, wherein said vector is a plasmid, phage or recombinant virus.

136. (Previously Presented) The expression vector of claim 132, wherein said encoded multitarget partially double-stranded RNA molecule lacks a poly-adenylation signal.

137. (Cancelled)

138. (Previously Presented) The expression vector of claim 132, wherein said two or more different double stranded RNA sequences are homologous and complementary to two or more target sequences of more than one target gene.

139. (Currently Amended) The expression vector of claim 132, wherein the multitarget partially double-stranded RNA molecule is at least about 100 nucleotides in length, and ~~wherein each different double stranded RNA sequence comprises at least 11 to 30 nucleotides wherein at least 11 to 30 nucleotides of said multitarget partially double-stranded RNA molecule are involved in each different double-stranded sequence.~~

140. (Previously Presented) The expression vector of claim 132, wherein each different double-stranded RNA sequence contains at least one segment of 30 contiguous nucleotides with a homology of at least 50% to a similar 30 nucleotide region of the target sequence, wherein said segment of 30 contiguous nucleotides is also non-homologous to any naturally occurring and essential polynucleotide sequence in said cell.

141. (Cancelled)

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142. (Previously Presented) The expression vector of claim 132, wherein said multitarget partially double-stranded RNA molecule is between about 100 and 10,000 polynucleotides in length.

143 (Previously Presented) The expression vector of claim 132, wherein said multitarget partially double-stranded RNA molecule is at least about 200 nucleotides in length.

144. (Previously Presented) The expression vector of claim 132, wherein one or more of said different double stranded RNA sequences comprises a sense polynucleotide and an antisense polynucleotide separated by a non-base-paired polynucleotide sequence.

145 (Previously presented) The expression vector of claim 144, wherein said sense and antisense polynucleotides form a hairpin.

146. (Cancelled)

147. (Previously Presented) The expression vector of claim 132, wherein said cleavage sequences are autocatalytic sequences or splice sites.

Claims 148-156. (Cancelled)

157. (Previously Presented) The expression vector of claim 132, wherein said at least one target gene is from a single target pathogen.

158. (Previously presented) The expression vector of claim 138, wherein said more than one target genes are from more than one target pathogens.

159. (Previously presented) The expression vector of claim 157, wherein said target pathogen is a virus.

160. (Previously presented) The expression vector of claim 159, wherein said virus is selected from the group consisting of HBV, HIV, HSV, CMV, HPV, HTLV and EBV.

161 (Previously presented) The expression vector of claim 158, wherein said more than one target pathogens are viruses.

162. (Previously Presented) The expression vector of claim 161, wherein said more than one viruses are selected from the group consisting of HBV, HIV, HSV, CMV, HPV, HTLV and EBV.

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163. (Previously Presented) The expression vector of claim 132, wherein said at least one target gene is associated with a disease or disorder in a mammal.

164. (Previously presented) The expression vector of claim 163, wherein said at least one target gene is a cancer-associated gene.

165. (Previously presented) The expression vector of claim 138, wherein said more than one target genes are associated with a disease or disorder in a mammal.

166. (Previously presented) The expression vector of claim 165, wherein said more than one target genes are cancer-associated genes.

167. (Previously Presented) The expression vector of claim 132, wherein said two or more sequences of said at least one target gene are selected from the group consisting of transcribed sequences, non-transcribed sequences, coding sequences, non-coding sequences, exon-containing sequences, regulatory sequences and promoter sequences.

Claims 168 - 171 (Cancelled)

172. (Previously Presented) A composition comprising the expression vector of claim 132.

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173. (Previously presented) The composition of claim 172 further comprising an agent which facilitates polynucleotide uptake by a cell.

174. (Currently Amended) The expression vector of claim 132, wherein the multitarget partially double-stranded RNA molecule is less than about 750 nucleotides in length, and ~~wherein each different double stranded RNA sequence comprises at least 11 to 30 nucleotides~~ ~~wherein at least 11 to 30 nucleotides of said multitarget partially double-stranded RNA molecule are involved in each different double-stranded sequence.~~